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ABSTRACT

This paper addresses bibliographic services in the 21st century. The paper begins by reviewing achievements of the past 30 years, including Universal Bibliographic Control (UBC), MARC, International Standard Bibliographic Description (ISBD), and the Anglo-American Cataloguing Rules, 2nd edition (AACR2). The cataloging of electronic resources is then discussed, including problems and the proposed metadata approach to bringing them under bibliographic control. Differences between electronic resources and print documents are delineated. A taxonomy of electronic documents is presented that includes the following categories: (1) ephemera; (2) commercial sites; (3) print-derived resources; (4) electronic serials (free-standing, i.e., not derived from print); (5) digitized archives (textual, sound, and visual); and (6) original creative works (textual, sound, and visual). The question of what standards to use is addressed. Metadata is discussed as an alternative to cataloging, and the possibility of several layers of treatment depending on the value assigned to electronic resources is considered. The question of how the cataloging of electronic resources is to be organized is then addressed, including how to identify worthwhile materials, creating and maintaining the resulting databases, and coordinating the national effort. (Contains 17 references.) (MES)

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Bibliographic control or chaos: an agenda for national bibliographic services in the 21st century

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The great irony of our present situation is that we have reached near-perfection in bibliographic control of "traditional" library materials at the same time as the advent of electronic resources is seen by some as threatening the very existence of library services—including bibliographic control. Before considering the question of "cataloguing the Web and the Internet," it is salutary to review the great achievements of the past thirty years—in considering where we are going it is necessary to know where we have been. When the ideal of Universal Bibliographic Control (UBC) was first advanced[i] thirty years ago, the international library community was only beginning to discern dimly the possibilities of the interconnection of international standardization and library automation. International standardization was at a very early stage (far closer to an ideal than a reality) and the ideal of each item being catalogued once in its country of origin—the resulting record being made available to the world community—seemed far from practical realization. Records were exchanged between countries (mostly between national libraries), but in the most inefficient manner possible—print on paper—and, since they resulted from different cataloguing codes and practices, were integrated into catalogues with great difficulty. The choice was between incorporating international records without alteration—something that degraded the catalogue very quickly—or doing such extensive revision (and retyping) that it would have been cheaper and quicker to catalogue the item oneself *ab initio*. MARC was in its infancy when UBC was proclaimed as an ideal,[ii] the International Standard Bibliographic Description (ISBD) was still being drafted,[iii] and, despite the Paris Principles,[iv] cataloguing rules in different countries lacked a common basis for the assignment and form of access points ("headings") and adhered to different descriptive practices. It was, I believe, the confluence of a need (national and research libraries throughout the world needing less expensive and

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more current cataloguing) and a means (automation and, more specifically, MARC) that has brought us nearer to UBC than anyone would have dreamed possible thirty years ago.

The idea of a universal bibliography is nearly as old as bibliography itself.[v] The idea of economies in bibliographic control by means of sharing catalogue records between libraries (cooperative cataloguing) or purchasing catalogue records for other (usually national) libraries goes back to, at least, the middle of the 19th century. In fact, the American librarian Charles Coffin Jewett drew up his cataloguing rules[vi] specifically for a proposed scheme by which the Smithsonian Institution would produce "separate, stereotyped titles" to be used in the catalogues of American libraries. In these, and in the hugely successful Library of Congress catalogue card service and the *National union catalog* to which it gave rise, we can see bibliographic needs and desires that lacked only an appropriate technology to be met. In hindsight, it is easy to see a trajectory of inevitability that made MARC, the ISBDs, AACR2, and other vehicles of international bibliographic standardization seem more the result of historical forces than the often faltering and separate steps they were in truth. Each of the three standards I mention had original purposes that were quite different from their eventual impact on international standardization. MARC was brought into being originally to facilitate the creation of LC catalogue cards on demand. The ISBD evolved from the Standard Bibliographic Description drawn up by a committee appointed as a consequence of IFLA's International Conference of Cataloguing Experts (IMCE).[vii] The SBD was seen, among other things, as a means of standardizing the *presentation* of descriptive data so that it could be machine-translated into MARC (hence the stylized and individual punctuation). AACR2 was the culmination of decades of effort to bring uniformity to cataloguing practice in the English-speaking world, and, particularly, to reconcile British and North American descriptive cataloguing practices. Each of these three standards metamorphosed and had an impact far beyond the anticipation of all but the most far-sighted. It is instructive to recall how and why each developed and expanded, because we need to understand that the bibliographic world (just like the real world) is full of unintended consequences and the ripples from a stone thrown in one part of the bibliographic pond may eventually cover it all.

The MARC format is, by any standards, an historic achievement. It has been the main force in international standardization from a practical point of view. It is, literally, the engine that has made UBC possible. The journey from the caterpillar of the automation of card production to the beautiful butterfly of today has been long and largely successful. It is worth pointing out, however, that its origins and original purposes (including being a carrier format rather than the way in which bibliographic information is stored and manipulated) have created drawbacks that should be hardly surprising when one considers we are dealing with a 30 year old standard. The structure of MARC is that of the catalogue card, when computer systems call for a different approach. Be that as it may, the fact is that there are tens of millions of MARC records in the world; MARC is accepted and used throughout the world; MARC is the basis for almost all automated bibliographic systems (including commercially produced systems); and, no practically feasible or demonstrably better system has been advocated. It should be unnecessary to point out that MARC is merely a *framework* standard—that is, it is a way of storing and making manipulatable data that has been formulated in accordance with *content* standards (cataloguing codes and the like). I would not trouble to point that out were it not for the frequent references to "MARC cataloguing" in writings about metadata and "simplified" cataloguing. There is, of course, no such thing as "MARC cataloguing"—MARC is the way in which we encode the results of the cataloguing process and has little or no influence on that process.

One of the two documents studied at the IMCE was a comparison of descriptions from cataloguing agencies throughout the world. The document revealed a great commonality of the information found in such descriptions and the order in which that information was presented. It found differences in the abbreviations used and other stylistic matters (mainly due to language differences) but was able to propose a conflation of the descriptions that formed the basis of what became the SBD and later the ISBD. The idea was originally to create a basis for agreement across cataloguing codes on the relatively non-contentious matter of descriptive data. Soon, however, this was supplemented by the idea that universally

used distinctive punctuation, clearly identifying the areas and elements of the SBD, would not only aid in the understanding of bibliographic data in unfamiliar languages but could also be used in automatic translation of that data into MARC records. It is no coincidence that the areas and elements of the ISBD correspond exactly to the relevant fields and sub-fields of the MARC format.

In accordance with the theme of stumbling toward standardization, it should be noted that both MARC and the ISBD were developed initially for books and only later generalized into standards for all types of library material.

The *Second edition* of the *Anglo-American cataloguing rules* (AACR2) is, in fact, nothing of the sort. It was politically expedient at the time to identify this new code as a revision of the previous *Anglo-American catalog[u]ing rules* (1968), but AACR2 is completely different from its predecessors in many important ways. One need only cite the facts that AACR2 is a single text (unlike its predecessors, which came in North American and British versions), is the most complete working out of the ISBD for materials of all kinds, and represents the triumph of Lubetzkyan principles, which the first AACR signally did not. Be that as it may, AACR2 quickly transcended even the historic achievement of being a unitary English-language cataloguing code to become the nearest approach to a world code we have. In the words of the introduction to the Italian translation of AACR2:[viii]

Le *Regole di catalogazione*, nella loro seconda edizione, sono il codice più diffuso nel mondo (sono state pubblicate in gran numero di lingue diverse) e l'unico che—di fatto—svolga le funzioni di codice catalografico internazionale. [The *Cataloguing rules*, in their second edition, are the world's most widely used (they have been translated into numerous different languages) and the only rules that are, de facto, an international cataloguing code.]

This state of affairs is partly due, of course, to the dominance of the English language (in its various manifestations) in the modern world. It is also due, in part, to the fact that AACR2 represents the most detailed working out of the principles of author/title cataloguing set forth in the Paris principles and based on the analysis and pioneering work of Seymour Lubetzky;[ix] and of the application of the ISBD family of standards to all library materials.

Here we stand then, on the brink of Universal Bibliographic Control for all 'traditional" (i.e., non-electronic) materials with a universally accepted format for exchanging bibliographic data, a universally accepted standard for recording descriptive data, and a quasi-universal cataloguing code that is either in use in, or influencing the codes of, most of the countries in the world. Is there any reason *in principle* why we should not bring electronic documents and resources into this architecture of bibliographic control? The answer is "no." Are there *practical* reasons why this task is formidable? The answer is "yes."

I have written and spoken elsewhere about the problems posed by electronic resources and the proposed "metadata" approach to bringing them under a form of bibliographic control.[x] I will try here to summarize the arguments put forward in those papers and to propose a direction that I advocate for a new age of bibliographic control. The first issue is that of the electronic resources themselves. Some are closely analogous to print documents—this is hardly surprising as many electronic documents are derived from print documents. Also, there is an established pattern of new technologies adopting the outward signs and structures of previous technologies—just think of radio news "headlines" and of television "magazines" with their "front pages." We even refer to elements of Web sites as "pages." Other electronic documents are quite dissimilar and, therefore, do not immediately seem to be amenable to existing bibliographic control structures. On reflection, however, we can see that there is a commonality between documents that embraces all formats. Electronic documents have titles, dates, texts and illustrations, editions, publishers, relationships to other documents (electronic and otherwise), authors,[xi] contributors, and corporate bodies associated with them. We know well how to deal with each of these bibliographic elements, how to record them, how to exercise vocabulary control, and how to create MARC records that can be integrated into library catalogues. Why then have many people either despaired of bringing

electronic documents under bibliographic control or advocated solutions such a metadata, expert systems, and sophisticated search engines as alternatives to cataloguing? I believe there are a number of answers to that question (not excluding ignorance as a factor), but the most important center on the perceived characteristics of documents on the Net and Web.

The attributes of a well-regulated library are well known to us all. They are organization, retrievability, authenticity, and fixity. There are those who claim that electronic documents and sites (assemblages of electronic documents) are different in kind and not just degree from all the other formats that human beings have used to communicate and preserve knowledge across the centuries. (This is not a new phenomenon—just think of the semi-hysteria in North American libraries over audio-visual materials in the 1960s and 1970s. Then as now, A/V materials were thought to call for special and different cataloguing rules, specially trained librarians, and the transformation of the library into a "resource center." The tumult died as people came to their senses and integrated A/V materials into their collections and cataloguing rules—and we still have the Library of Congress not the Resource Center of Congress.) The strongest support for this notion of exceptionalism comes from the evanescence and mutability of electronic documents. Those characteristics, which any true librarian deplores, are really the logical outcome of the history of human communication—each format produces more documents than its predecessor, and each is less durable than its predecessor. It takes a long time to make many copies of stones bearing carved messages, but those messages can be read millennia later. You can send an e.mail message from Boston to Addis Ababa in a twinkling of an eye, but that message may be expunged in a second twinkling. Many electronic documents are like those minute particles of matter that are only known because scientists can see where they have been during their micro-milliseconds of existence. Let me pose a deep philosophical question—does an e.mail message exist if it is deleted unopened?

There is another important difference between electronic documents and all the types of library material that preceded them. It centers on how electronic resources come to our notice. Let me tell you a short fable. There is an alternative universe in which there are books but no electronic documents. In that universe librarians have no control over the books that they purchase—no selection, no approval plans, and no collection development criteria. All these have been replaced by several trucks pulling up every hour, day and night, to the library's loading dock and depositing heaps of unordered and unwanted books—mostly from unheard-of publishers, vanity presses, and basement self-publishers. Some of those books might be of interest and use, but which are they, how do librarians and library users find them, and what on earth do they do with all the rest? In that alternative universe, librarianship becomes a much more random, disorganized process than anything on earth. The library would send out squads of trained personnel to root through the piles looking for worthwhile items to be catalogued and shelved. But wait! This is an alternative universe and, having selected 100 books from the piles and fully catalogued and organized them, librarians come back the next day to find that 25 of them have vanished and 25 have changed their titles! In the mean time, the piles outside the library are multiplying and shape-shifting and, for every 100 books the library SWAT team rescues, 200 are added by the unending delivery trucks. Small wonder that, in the alternative universe, librarians are careworn and cataloguers neurotic.

If you take that alternative universe and substitute electronic documents for books, you have a taste of what we are trying to deal with in bringing electronic documents under bibliographic control. There are too many of them, some of them vanish after being recorded, some change their attributes, some are inauthentic in that they are not what they purport to be, some cannot be found, and there is no filtering out of the ephemeral and the meretricious (as is done by the book publishing and selling industry). I believe that the idea of "cataloguing the Web" is not only unattainable but also undesirable—most of what is on the Net and the Web does not merit the expense and the time of cataloguing. The questions are, of course, which electronic documents are worth cataloguing and how many of them are there? In order to answer those questions we need an, at least, outline taxonomy of the world of electronic documents. Most statements about electronic communication (laudatory and critical) tend toward generalization and the bandying about of vast numbers rather than being evaluative or descriptive. Whether one believes that the

Internet represents a quantum leap forward for humankind; that the Internet is a vast wasteland; or that it is good in part and worthless in part, surely we can all benefit from understanding the nature of the documents and resources the Internet makes available. In that spirit, I offer the following breakdown of Internet and Web documents. What we are faced with, broadly, is

- Ephemera
- Commercial sites
- Print-derived resources
- Electronic serials (free-standing, i.e., not derived from print)
- Digitized archives (textual, sound, and visual)
- Original creative works (textual, sound, and visual)

Ephemera. Libraries have always ruled out, consciously or unconsciously, vast areas of recorded information. We have not only been selective within formats but also have been very selective when it comes to formats that we do and do not collect. Much of the stuff that we used to ignore now shows up on the Net and the Web. To demonstrate this, just do a search using a search engine on any subject and review the inevitable few thousand "hits" with a view to imagining their tangible analogues. Personal Web pages are the electronic versions of scrapbooks and diaries—of keen interest to their compilers but to few others. Restaurant reviews? Press releases in digital form? Association newsletters? Weather forecasts? Faculty lists of Australian universities? Syllabi? Advertisements? So, on and on it goes—acres of the cyberworld full of ephemera. We have never brought this stuff under bibliographic control—why should we start now?

Commercial sites and pornography. People anxious to sell you something populate much of the electronic frontier. From e.tailers to business-to-business sites to pornographers, they are all pursuing the Capitalist Dream of easy profits. Ironically, there are very few who have realized that dream and the concept of a new, knowledge-based economy now looks somewhat dishevelled. The only uniformly successful commercial enterprises in cyberspace are those of pornographers. Libraries as a whole have never collected commercial information or, with few exceptions, pornography

Print-derived resources. One of the indisputably valuable sectors of the Net is composed of many documents and sites that are derived from the print industry and are dependent on the success of that industry for their very existence. These do not, by and large, present much of a technical bibliographic control problem. We know, in principle, how to catalogue different format manifestations of texts and graphic publications—extending that knowledge into cyberspace is not a massive intellectual challenge. Further, print derived electronic resources are far less transient than their purely electronic counterparts.

Electronic journals. Most electronic journals are, of course, based on the products of a flourishing print industry. There have been many forecasts over the last decade that electronic journals will supplant print, but no one has, as yet, produced an economic model for such a major change and there are, at this time, a microscopic number of commercially viable true electronic journals. The problem is, of course, that the whole concept of a journal (serial assemblages of articles which are paid for in advance—whether they are ever read or not) seems inapplicable to the electronic age. Many problems in adapting to technology are caused by simply automating procedures or resources and not re-thinking the whole issue. Why not, in an age of electronic communication, provide services that deliver desired articles on demand and charge the users only for the articles that are used? In such a world, the "journal" would no longer exist and libraries would be cataloguing at the level of what S.R. Ranganathan called "micro-thought"—a level that we have always left to indexing and abstracting services.

Digitized archives (textual, sound, and visual). One of the most important and valuable achievements of the electronic age is the way in which large archives have been made available to global audiences. Those

archives (which are unique by definition) have, hitherto, been accessible only to researchers with the means and time to travel to the location of the archive. To take a well-known example, the Library of Congress's *American Memory Project*[xii] is a vast assemblage of pamphlets and other texts, graphic items, films, sound recordings, maps, etc., that is taking advantage of digitization and the Web to give the world access to the untold riches of the Library's archival collections. Other institutions have created Web archives of coins, stamps, posters, manuscripts, prints and drawings, early films, sound recordings, photographs, and every other conceivable means of communication, including artefacts. There has long been a great divide between library cataloguing and archival cataloguing. The former concentrates on individual manifestations of works and the latter has been largely concerned with creating finding aids for assemblages of documents. In the 20+ years since the appearance of AACR2, there has been some movement on this matter to bring the two cataloguing traditions closer together.[xiii] Although the two will always operate at different levels, there is no reason why their cataloguing practices cannot be harmonized and the results of such harmonization applied to the various parts of the *American Memory Project* and other such digital archives.

Original creative works (textual, sound, and visual). The advent of cyberspace has created a new environment for artists in all older media to extend and develop their art. Film, a new medium of communication 100 years ago, developed into an art form for directors (the French term *auteur* is particularly significant here), cinematographers, and a new breed of actors. Television, that great cultural wasteland, has not been as culturally beneficent as film, but it has given rise to video artists like Nam June Paik. In the same way, there are forecasts of new breeds of creators on the Internet including hypertext writers, digital artists, cyberpoets, and electronic musicians. When such productions belong to the same families as materials collected and catalogued by libraries (as is the case with hypertexts) they will be collected and catalogued. Other artistic productions in cyberspace will be the province of museologists, videographers, and art collectors.

Obviously, we need a more detailed analysis of the materials available on the Net and the Web than I have offered here and, crucially, we need more quantified analysis if we are to delineate the problem accurately and frame a response to it. Just as a beginning, we need to know which areas of cyberspace we are going to chart and catalogue and, by inference, which areas we are going to leave to search engines and the like. These will not be easy studies, but facts are a far better basis for planning than are the techno-boosterism and hand-waving that characterize most discussions of these topics.

If we reach a point at which we have decided which electronic documents and resources we are to bring under bibliographic control, two important questions will still remain. Which standards shall we use? How is the cataloguing to be organized?

The first question brings me to the topic of metadata. The term means "data about data"—a mostly meaningless concept that, taken literally, would embrace library cataloguing, even though metadata has been explicitly conceived as something that lacks most of the important attributes of cataloguing. The idea behind metadata is that there is some Third Way of organizing and giving access to electronic resources that is approximately half way between cataloguing (expensive and effective) and keyword searching (cheap and ineffective). Further, it is alleged that such low level bibliographic data can be supplied by authors, Webmasters, publishers, and others lacking any knowledge of cataloguing.

It is entirely possible, since the original concept of "metadata" did not originate among librarians, that no consideration was given to the use of "traditional" cataloguing, and, even though librarians are now involved in the projects, the idea that electronic resources cannot be catalogued using existing standards may be firmly entrenched. Be that as it may, the fact is that electronic bibliographic entities have the same attributes as other bibliographic entities. It is perfectly possible to catalogue electronic resources in such a way that the resulting records can be fully integrated into library catalogues. There is a recent *ISBD* for electronic resources[xiv] that will form the basis of the revision of Chapter 9 of *AACR2*; electronic resources have titles and creators (authors) that can be used to provide standard access points, they have subjects

that can be expressed in classification numbers and subject headings, and all that data can be incorporated into a MARC record. In short, if one of the justifications for the invention of metadata is that it is needed to facilitate access to electronic resources in the absence of cataloguing standards, that justification is simply wrong.

Perhaps the decision has been made, almost without thinking it through. That decision appears to be, since "traditional cataloguing" is too expensive, there must be a compromise—some third way—that will give the benefits of cataloguing without the effort or expense. In the words of the Introduction to the final report of the Nordic Metadata Project[xv]

> Many specialists believe that any metadata is better than no metadata at all - we do not need to stick with the *stringent quality requirements and complex formats of library catalogue systems*. Instead, it is possible to live with something simple, which will be easily understandable to publishers, authors and other people involved with the publishing of electronic documents. (*My emphasis.)*

This is one of the few mentions in this long report of the perceived need for, and nature of metadata as an alternative to cataloguing. It is taken for granted that there is something between "stringent quality requirements" and no quality at all, and that there is something between "complex formats" and almost no format at all.

It seems to be generally accepted that The Dublin Core is the most developed application of metadata and is on the verge of being generally accepted. It was developed by OCLC at its headquarters in Dublin, Ohio, and named for that municipality. It consists of 15 labeled descriptive elements. Cursory analysis shows us that each of these elements has its counterparts in the MARC format and that the content of each of them is governed by either codes in MARC fixed-length fields, cataloguing codes/ISBDs, and/or subject headings lists/thesauri. Of course, the Dublin Core and other metadata "standards" provide a framework for holding bibliographic data but no guidance on how to formulate those data. In short, it is a sub-set of MARC and nothing more. No bibliographic database of any significant size could possibly work if filled with Dublin Core records containing random data without vocabulary control and standard presentation. The "literature" on metadata is full of references to the complexity of the MARC format and of cataloguing codes, which is always presented as being a bad thing. It is worth pointing out that that format and those codes are complex because the bibliographic world is complex. Contrary to rumor, cataloguers do not invent rules to deal with situations that will never occur. The idea that this complex world embodied in millions of bibliographic entities can be reduced to data entered by the untrained into 15 categories is simply preposterous.

The Dublin Core is said to have the following positive attributes.[xvi] It:

- is very simple to learn
- has repeatable elements
- has optional elements
- can be extended for more complex applications
- can be embedded invisibly in Web pages
- is recognized by the World Wide Web Consortium

These are all true, but scarcely relevant to the basic concerns about metadata since none speak to the central points of the content of the bibliographic record or of the limited nature of the sub-set that the 15 elements represent.

The literature of metadata reveals a discussion on the future of the idea between proponents of the original simplicity of the concept and the idea that the metadata need to be normalized and subjected to vocabulary

control. This discussion boils down to a choice between an inexpensive and ineffective form of cataloguing in which the 15 elements of the Dublin Core are filled with unqualified and uncontrolled free text on the one hand or an expensive and more effective form of cataloguing in which at least some of the elements of the Dublin Core are filled with normalized controlled data decided on the basis of professional examination of the resource. Such human intervention would not, in all probability be as time-consuming and expensive as full cataloguing, but it would certainly go beyond the simplicity and inexpensiveness desired by those who take the Minimalist point of view.

My inclination has been to dismiss the Dublin Core, as an attempt to reinvent the wheel as something other than round, and to advocate the full application of library or archival cataloguing to those electronic resources that we deem worthy of such treatment. It may be, however, that we could have several layers of treatment depending on the value we assign to the various electronic resources. Such a system would be a pyramid, with the apex being that relatively small proportion of electronic resources that will merit full cataloguing according to existing standards. The next level could be that of enriched Dublin Core records with data in applicable fields being subject to vocabulary control. Then there would be those electronic resources with uncontrolled Dublin Core elements. The last layer would the huge number of electronic resources that would be retrievable, if at all, by search engines using free text searching.

My second question was "how is the cataloguing of electronic resources to be organized? It centers on how to proceed in identifying "worthwhile" materials, in creating and maintaining the databases that will result, and in coordinating the national effort. Again, we have choices. They are between, first, a Grand Plan such as the Library of Congress's action plan called "Bibliographic control of Web resources"[xvii] and, second, a grass roots movement in which individual libraries and librarians and groups of libraries choose and catalogue the documents, resources and sites that have been agreed to be worthwhile. Both approaches call for a common understanding of which types of resources are to be catalogued and agreements on the standards to be used. Perhaps the answer lies in national and international agreements that foster and coordinate individual action but do not inhibit it. That approach will be in many ways a reprise of the history of libraries. Individuals and individual libraries built collections, one choice at a time, over many years. It was not until much later that union catalogues and library collectives brought those individual collections into national, and later international, systems. The difference this time is that the benefits of the work of individual libraries and groups can be made available to all contemporaneously. Let a thousand cataloguing projects bloom, and record by record, collection by collection, worthwhile Net resources will be organized and made available in what will ultimately come to be international systems and databases based on internationally agreed standards.

When it comes to the question of bring the Net and the Web into bibliographic control, the elephant in the room is that of preservation of the human record. Supposing we solve all the problems of bibliographic standardization and the organization of a massive international effort, what is the point if the resources identified and catalogued are not preserved? Those with more faith than I look to gigantic electronic archives maintained by governments and private companies that will ensure the indefinite survival of the electronic records of humankind. This idea appears implausible when one looks at the cost of such archives, the dizzying rate of technological change, the need for the archives to be eternal, and the lack of interest outside the library and archive professions in the onward transmission in the onward transmission of the human record. We can, of course, ignore the problem and hope that it all turns out right in the end—after all, that is what we are doing now. Alternatively, we could turn to the only known way of preserving massive numbers of texts and images—print on acid-free paper. If you are inclined to dismiss that suggestion out of hand, I would recommend that you explore the financial costs and the cultural costs of the alternatives and keep an open mind.

In summary, when we get beyond all the pomposity and techno-babble that dominates discourse on our topic, we can see real problems and real issues. What are we going to do about identifying and making accessible the valuable records of humanity that are only available in electronic form? How are we going to deal with the mutability and evanescence of those records? How are we going to preserve those

resources and transmit them to posterity? We will only answer these questions if we employ wisdom and insight, understand the lessons of history, and work with the interests of all our users, present and future, in mind.

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[xii] http://memory.loc.gov/
[xiii] *See, for example,*Hensen, Steven. NISTFII and EAD: the evolution of archival description. *American archivist* 60 (1998) 3:284-296.
[xiv] ISBD(ER): international standard bibliographic description for electronic resources. München: K.G. Saur, 1997.
[xv] http://linnea.helsinki.fi/meta/nmfinal.htm (dated July 1998)
[xvi] http://www.adam.ac.uk/adam/metadata.html (Dated December 1997)
[xvii] http://lcweb.loc.gov/catdir/bibcontrol/dratiplan.html